

Exhibit 2

Primers for TaHo Experiment

Forward primer	Reverse primer	Fluorescent probe
CGGATGATGTCAGCGCTCTT	CCTGGGCTTCTCACACCATT	CCCCCATCTGCTCTGCCCTCTTG

Thermal Cycle Conditions

Cycle	Temperature	Time	Repeat
Hold	50 C	2 min	
Hold	95 C	10 min	
Cycle	95 C	15 sec.	40 cycle
	60 C	1 min.	

Alignment of DNA sequences of 2.2412 (Tankyrse2 or TaHo) and Tankyrase by CLUSTAL W (1.8) multiple sequence alignment.

Sequences in bold and underline show sequence of 2.2412 forward primer.

* indicates identify of sequence of 2.2412 (Tankyrase2) and Tankyrase.

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Tankyrase2  -----
Tankyrase   ATGGCGGCGTCGCGTCGCTCTCAGCATCATCACCACCATCATCAACAACAGCTCCAGCCC

Tankyrase2  -----
Tankyrase   GCCCCAGGGGCTTCAGCGCCGCCGCCACCTCCTCCCCACTCAGCCCTGGCCTGGCC

Tankyrase2  -----
Tankyrase   CCGGGGACCACCCCAGCCTCTCCACGGCCAGCGGCCTGGCCCCCTTCGCCTCCCCGCGG

Tankyrase2  -----
Tankyrase   CACGGCCTAGCGCTGCCGGAGGGGGATGGCAGTCGGGATCCGCCCCACAGGCCCCGATCC

Tankyrase2  -----
Tankyrase   CCGGACCCGGTTGACGGTACCAGCTGTTGCAGTACCACCAGCACAACTGTACCGTCGCC

Tankyrase2  -----
Tankyrase   GCCGCTCCCGTGGTCCCAGCGGTTTCTACTTCATCTGCCGCTGGGGTCGCTCCCAACCCA

Tankyrase2  -----
Tankyrase   GCCGGCAGTGGCAGTAACAATTCACCGTCGTCCTCTTCTTCCCCGACTTCTTCCTCATCT

Tankyrase2  -----
Tankyrase   TCCTCTCCATCCTCCCCTGGATCGAGCTTGGCGGAGAGCCCCGAGGCGGCCGGAGTTAGC
                                           *  *  *

Tankyrase2  GTCGCCGCTGCGCCGGCGGG-GGAGCGGCCTGCGCGAGCGCCGCGGCCGAGGCCGTGGAG
Tankyrase   AGCACAGCACCCTGGGGCCTGGGGCAGCAGGACCTGGGACAGGGGTCCCAGCAGTGAGC
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Tankyrase2  CCGGCCGCCCCGAGAGCTGTTGAGGCGTGCCGCAACGGGGACGTGGAACGAGTCAAGAGG
Tankyrase   GGGGCCCTACGGGAAGTCTGGAGGCCTGTCGCAATGGGGACGTGTCCCGGGTAAAGAGG
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Tankyrase2	CTGGTGACGCCTGAGAAGGTGAACAGCCGCGACACGGCGGGCAGGAAATCCACCCCGCTG
Tankyrase	CTGGTGGACGCGGCAAACGTAAATGCAAAGGACATGGCCGGCCGGAAGTCTTCTCCCCTG
	***** *
Tankyrase2	CACTTCGCCGCGAGGTTTTGGGCGGAAAGACGTAGTTGAATATTTGCTTCAGAATGGTGCA
Tankyrase	CACTTCGCTGCAGGTTTTGGAAGGAAGGATGTTGTAGAACAATTACTACAGATGGGTGCT
	***** *
Tankyrase2	AATGTCCAAGCACGTGATGATGGGGGCCTTATTCCTCTTCATAATGCATGCTCTTTTGGT
Tankyrase	AATGTCCACGCTCGTGATGATGGAGGTCTCATCCCGCTTCATAATGCCTGTTCTTTTGGC
	***** *
Tankyrase2	CATGCTGAAGTAGTCAATCTCCTTTTGCACATGGTGCAGACCCCAATGCTCGAGATAAT
Tankyrase	CATGCTGAGGTTGTGAGTCTGTTATTGTGCGCAAGGAGCTGATCCAAATGCCAGGGATAAC
	***** *
Tankyrase2	TGGAATTATACTCCTCTCCATGAAGCTGCAATTAAAGGAAAGATTGATGTTTGCATTGTG
Tankyrase	TGGAACATACACCTCTGCATGAAGCTGCTATTAAAGGGAAGATCGATGTGTGCATTGTG
	***** *
Tankyrase2	CTGTTACAGCATGGAGCTGAGCCAACCATCCGAAATACAGATGGAAGGACAGCATTGGAT
Tankyrase	CTGCTGCAGCACGGAGCTGACCCAAACATTGGAACACTGATGGGAAATCAGCCCTGGAC
	*** *
Tankyrase2	TTAGCAGATCCATCTGCCAAAGCAGTGCTTACTGGTGAATATAAGAAAGATGAACTCTTA
Tankyrase	CTGGCAGATCCTTCAGCAAAAGCTGTCTTACAGGTGAATACAAGAAAGACGAACTCCTA
	* *
Tankyrase2	GAAAGTGCCAGGAGTGGAATGAAGAAAAAATGATGGCTCTACTCACACCATTAAATGTC
Tankyrase	GAAGCTGCTAGGAGTGGAATGAAGAAAACTAATGGCTTTACTGACTCCTCTAAATGTG
	*** *
Tankyrase2	AACTGCCACGCAAGTGATGGCAGAAAGTCAACTCCATTACATTTGGCAGCAGGATATAAC
Tankyrase	AATTGCCATGCAAGTGATGGGCGAAAGTCGACTCCTTTACATCTAGCAGCGGGCTACAAC
	** *
Tankyrase2	AGAGTAAAGATTGTACAGCTGTTACTGCAACATGGAGCTGATGTCCATGCTAAAGATAAA
Tankyrase	AGAGTTCGAATAGTTTCAGCTTCTTCTTCAGCATGGTGCTGATGTTTCATGCAAAAGACAAA
	***** *
Tankyrase2	GGTGATCTGGTACCATTACACAATGCCTGTTCTTATGGTCATTATGAAGTAACTGAACTT
Tankyrase	GGTGGACTTGTGCCTCTTCATAATGCATGTTTCATATGGACATTATGAAGTCACAGAAGT
	***** *
Tankyrase2	TTGGTCAAGCATGGTGCCTGTGTAAATGCAATGGACTTGTGGCAATTCCTCCTCTTCAT
Tankyrase	CTACTAAAGCATGGAGCTTGTGTTAATGCCATGGATCTCTGGCAGTTTACTCCACTGCAC
	* *
Tankyrase2	GAGGCAGCTTCTAAGAACAGGGTTGAAGTATGTTCTCTCTCTTAAGTTATGGTGCAGAC
Tankyrase	GAGGCTGCTTCCAAGAACCGTGTAGAAGTCTGCTCTTTGTTACTTAGCCATGGCGCTGAT
	***** *

Tankyrase2	CCAACACTGCTCAATTGTCAACAATAAAAGTGCTATAGACTTGGCTCCCACACCACAGTTA
Tankyrase	CCTACGTTAGTCAACTGCCATGGCAAAAGTGCTGTGGATATGGCTCCAACCCGGAGCTT
	** ** * **** ** ** ***** * ** ***** ** ** ** *
Tankyrase2	AAAGAAAGATTAGCATATGAATTTAAAGGCCACTCGTTGCTGCAAGCTGCACGAGAAGCT
Tankyrase	AGGGAGAGATTGACTTATGAATTTAAAGGTCATTCTTTACTACAAGCAGCCAGAGAAGCA
	* ** ***** * ***** ** ** ** ** ***** ** *****
Tankyrase2	GATGTTACTCGAATCAAAAAACATCTCTCTCTGGAAATGGTGAATTTCAAGCATCCTCAA
Tankyrase	GACTTAGCTAAAGTTAAAAAACACTCGCTCTGGAAATCATTAAATTTCAAACAACCGCAG
	** * ** * * ***** ** ***** * ***** ** ** *
Tankyrase2	ACACATGAAACAGCATTGCATTGTGCTGCTGCATCTCCATATCCCAAAGAAAGCAAATA
Tankyrase	TCTCATGAAACAGCACTGCACTGTGCTGTGGCCTCTCTGCATCCCAAACGTAAACAAGTG
	* ***** ** ***** ** ***** ***** * ** ** *
Tankyrase2	TGTGAACTGTTGCTAAGAAAAGGAGCAAACATCAATGAAAAGACTAAAGAATTCTTGACT
Tankyrase	ACAGAATTGTTACTTAGAAAAGGAGCAAATGTTAATGAAAAAATAAAGATTTTCATGACT
	*** ** ** * ***** * ***** * ***** ** *****
Tankyrase2	CCTCTGCACGTGGCATCTGAGAAAGCTCATAATGATGTTGTTGAAGTAGTGGTGAAACAT
Tankyrase	CCCCTGCATGTTGCAGCCGAAAGAGCCCATATGATGTCATGGAAGTTCTGCATAAGCAT
	** ***** ** ** * ** * ** ***** * ***** ** ** *
Tankyrase2	GAAGCAAAGGTTAATGCTCTGGATAATCTTGGTCAGACTTCTCTACACAGAGCTGCATAT
Tankyrase	GGCGCCAAGATGAATGCACTGGACACCCTTGGTCAGACTGCTTTGCATAGAGCCGCCCTA
	* ** ** * * ***** ** * ***** ** * ** ***** *
Tankyrase2	TGTGGTCATCTACAAACCTGCCGCCTACTCCTGAGCTATGGGTGTGATCCTAACATTATA
Tankyrase	GCAGGCCACCTGCAGACCTGCCGCCTCCTGCTGAGTTACGGCTCTGACCCCTCCATCATC
	** ** * * ***** ** ***** ** ** * ** ** ** ** *** **
Tankyrase2	TCCCTTCAGGGCTTTACTGCTTTACAGATGGGAAATGAAAATGTACAGCAACTCCTCCAA
Tankyrase	TCCTTACAAGGCTTCACAGCAGCAGATGGGCAATGAAGCAGTGCAGCAGATTCTGAGT
	*** * ** ***** ** ** ***** ***** ** ***** ** **
Tankyrase2	GAGGGTATCTCATTAGGTAATTCAGAGGCAGACAGACAATTGCTGGAAGCTGCAAAGGCT
Tankyrase	GAGAGTACACCTATACGTACTTCTGATGTTGATTATCGACTCTTAGAGGCATCTAAAGCT
	** ** ** * ** ** ** ** ** ** ** ** * ** * * * * ** ** ** *
Tankyrase2	GGAGATGTCGAAACTGTAAAAAACTGTGTACTGTTCAGAGTGTCAACTGCAGAGACATT
Tankyrase	GGAGACTTGGAAACTGTGAAGCAACTTTCAGCTCTCAAATGTGAATTGTAGAGACTTA
	***** * ***** ** ***** ** * ***** * ** ** ** ***** *
Tankyrase2	GAAGGGCGTCAGTCTACACCACTTCATTTTGCAGCTGGGTATAACAGAGTGTCCGTGGTG
Tankyrase	GAGGGCCGGCATTCCACGCCCTTACACTTCGCAGCAGGCTACAACCGCGTGTCTGTTGTA
	** ** ** * * ** * * ** * ** * * ***** ** ** ** * ***** ** **
Tankyrase2	GAATATCTGCTACAGCATGGAGCTGATGTGCATGCTAAAGATAAAGGAGGCCTTGTACCT
Tankyrase	GAGTACCTGCTACACCACGGTGCCGATGTCCATGCCAAAGACAAGGGTGGCTTGGTGCCC
	** ** ***** ** ** * * ***** ***** ***** ** ** ** * ** **

Tankyrase2	GATGCTCTCTCTTCAGGTCCATCTAGCCCATCAAGCCTTTCTGCAGCCAGCAGTCTTGAC
Tankyrase	A-----TCTCACCAG---CATCCACCCCTCCTGCCTCTCGGCTGCCAGCAGCATAGAC
	**** * * * * * * * * * * * * * * * * *
Tankyrase2	AAC TTATCTGGGAGT TTTT CAGAACTGTCTTCAGTAGTTAGTTCAAGTGGAA CAGAGGGT
Tankyrase	AACCTCACTGGCCCTTTAGCAGAGTTGGCCGTAGGAGGAGCCTCCAATGCAGGGGATGGC
	*** * * * * * * * * * * * * * * * * *
Tankyrase2	GCTTCCAGTTTGGAGAAAAAGGAGGTTCCAGGAGTAGATTTTAGCATAACT-----CAA
Tankyrase	GCCGCGGGAACAGAAAGGAAGGAAGGAGAAGTTGCTGGTCTTGACATGAATATCAGCCAA
	** * * * * * * * * * * * * * * * * *
Tankyrase2	TTCGTAAGGAATCTTGGACTTGAGCACCTAATGGATATATTTGAGAGAGAACAGATCACT
Tankyrase	TTTCTAAAAGCCTTGGCCTTGAACACCTTCGGGATATCTTTGAAACAGAACAGATTACA
	** *** * * * * * * * * * * * * * * * * *
Tankyrase2	TTGGATGTATTAGTTGAGATGGGGCACAAAGGAGCTGAAGGAGATTGGAATCAATGCTTAT
Tankyrase	CTAGATGTGTTGGCTGATATGGGT CATGAAGAGTTGAAAGAAATAGGCATCAATGCATAT
	* *
Tankyrase2	GGACATAGGCACAACTAATTAAAGGAGTCGAGAGACTTATCTCCGGACAACAAGGTCTT
Tankyrase	GGGCACCGCCACAAATTAATCAAAGGAGTAGAAAGACTCTTAGGTGGACAACAAGGCACC
	** * * * * * * * * * * * * * * * * *
Tankyrase2	AACCCATATTTAACTTTGAACACCTCTGGTAGTGGAACAATTCTTATAGATCTGTCTCCT
Tankyrase	AATCCTTATTTGACTTTTCACTGTGTTAATCAGGGAACGATTTTGCTGGATCTTGCTCCA
	** * * * * * * * * * * * * * * * * *
Tankyrase2	GATGATAAAGAGTTTCAGTCTGTGGAGGAAGAGATGCAAAGTACAGTTCGAGAGCACAGA
Tankyrase	GAAGATAAAGAATATCAGTCAGTGGAAGAAGAGATGCAAAGTACTATTCGAGAACACAGA
	** * * * * * * * * * * * * * * * * *
Tankyrase2	GATGGAGGTCATGCAGGTGGAATCTTCAACAGATACAATATTTCTCAAGATTCAGAAGGTT
Tankyrase	GATGGTGGTAATGCTGGCGGCATCTTCAACAGATACAATGTCAATTCGAATTCAAAAGTT
	***** ** * * * * * * * * * * * * * * *
Tankyrase2	TGTAACAAGAACTATGGGAAAGATACACTACCGGAGAAAAGAAGTTTCTGAAGAAAAC
Tankyrase	GTCAACAAGAAGTTGAGGGAGCGGTTCTGCCACCGACAGAAGGAAGTGTCTGAGGAGAAT
	***** * * * * * * * * * * * * * * *
Tankyrase2	CACAACCATGCCAATGAACGAATGCTATTTTCATGGGTCTCCTTTTGTGAATGCAATTATC
Tankyrase	CACAACCATCACAATGAGCGCATGTTGTTTCATGGTTCTCCTTTTCATTAATGCCATTAT
	***** * * * * * * * * * * * * * * *
Tankyrase2	CACAAAGGCTTTGATGAAAGGCATGCGTACATAGGTGGTATGTTTGGAGCTGGCATTAT
Tankyrase	CATAAAGGTTTGTATGAGCGACATGCATACATAGGAGGAATGTTTGGGGCCGGGATTTAT
	** * * * * * * * * * * * * * * * * *
Tankyrase2	TTTGCTGAAAACCTCTTCCAAAAGCAATCAATATGTATATGGAATTGGAGGAGGTACTGGG
Tankyrase	TTTGCTGAAAACCTCTTCCAAAAGCAACCAATATGTTTATGGAATTGGAGGAGGAACAGGC
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Tankyrase2	TGTCCAGTTCACAAAGACAGATCTTGTTACATTTGCCACAGGCAGCTGCTCTTTTGCCGG
Tankyrase	TGCCCTACACACAAGGACAGGTCATGCTATATATGTCACAGACAAATGCTCTTCTGTAGA
	** ** *
Tankyrase2	GTAACCTTGGGAAAGTCTTTCCTGCAGTTCAGTGCAATGAAAATGGCACATTCTCCTCCA
Tankyrase	GTGACCCTTGGGAAATCCTTTCCTGCAGTTTAGCACCATGAAAATGGCCACGCGCCTCCA
	** *
Tankyrase2	GGTCATCACTCAGTCACTGGTAGGCCAGTGTAATGGCCTAGCATTAGCTGAATATGTT
Tankyrase	GGGCACCACTCAGTCATTGGTAGACCGAGCGTCAATGGGCTGGCATATGCTGAATATGTC
	** *
Tankyrase2	ATTTACAGAGGAGAACAGGCTTATCCTGAGTATTTAATTACTTACCAGATTATGAGGCCT
Tankyrase	ATCTACAGAGGAGAACAGGCATACCCAGAGTATCTTATCACTTACCAGATCATGAAGCCA
	** *
Tankyrase2	GAAGGTATGGTCGATGG-ATAA-----
Tankyrase	GAAGCCCCTTCCCAGACCGCAACAGCCGCAGAGCAGAAGACCTAG
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